NOTES

M. JANSSEN has been appointed by the Paris Academy of Sciences to represent the French Government in the Congress which is to be held at Washington to determine the choice of the first geographical meridian. It is just to state that the original idea of a universal first meridian belongs to France, and that as far back as 1632 a decree signed by Louis XIII. and proposed by Cardinal Richelieu established a universal meridian on the island of Ferro. This meridian was ultimately abandoned by Cassini to gratify Louis XIV.'s pride, and the Paris one was retained by the Metric Commission in 1793 under the pretence that an arc of this meridian had been measured for determining the length of the unit of measure.

WE regret to announce the death of Dr. Heinrich Schellen, formerly director of the Cologne Realschule, and author of two well-known works, "Der electromagnetische Telegraph" and "Die Spektralanalyse." Besides these, Dr. Schellen published a book on arithmetic, an excellent German version of Padre Secchi's great work on the sun, and various other works on physical subjects. It was under his directorship and by his efforts that the Cologne School was raised from the rank of "Bürgerschule" to that of "Realschule erster Ordnung," and that it attained the high reputation it now enjoys. He died in Cologne in the first week of September, aged sixty-six years.

WE regret to announce the death of M. Jean Augustin Barral, the Perpetual Secretary of the French Société d'Agriculture, and the chief editor of *L'Agriculture*, a periodical of large circulation, and which, of all the Continental agricultural papers, was the most intensely devoted to the adaptation of English principles of rural economy to French conditions. M. Barral was born in Metz in 1820, and was a pupil of the Polytechnic School, where he was a *repetiteur* of chemistry for some time. He became most intimately connected with Bixio, the editor of *Maison Rustique*. Bixio and Barral made two daring aëronautical ascents from the Observatory grounds in 1850, when they ascended to an altitude of 18,000 feet, a height unsurpassed except by Glaisher and Tissandier. When Arago died he selected M. Barral, who had acted as his secretary for a long period, to publish his works. The Barral edition contains twelve large octavo volumes, exclusive of the "Astronomie Populaire," which fills four other volumes, and has been translated into almost every language. M. Barral edited the *Revue Horticole* and the *Journal d'Agriculture Pratique* for many years; it was on the occasion of the death of his friend Bixio that he resigned and started *L'Agriculture*, of which he was not only the editor but also the proprietor. He edited for ten years the *Revue de la Presse Scientifique*, an influential paper whose publication was stopped after a brilliant existence of eight years. M. Barral was a very popular character, much appreciated in Paris, where his loss will be heavily felt. Besides his editorial work he has written some popular works on scientific topics, and he leaves a number of academical essays, of which some have been edited under the form of pamphlets.

THE death is announced at Meran of Dr. Settari, one of the authorities on Lepidoptera.

A WARSAW correspondent informs us that on the 16th inst. there died in that city Jakób Natanson, formerly Professor of Chemistry in the principal school there. The late Prof. Natanson prepared carbamide synthetically by the action of ammonia gas on phosgene ($COCl_2$) in 1856. Prof. Natanson wrote many scientific papers in the Polish language; the most valuable are a text-book of chemistry ("Krótki mykład chemii orgañiernéj") and a treatise on organic chemistry. He also improved the methods of determining the density of vapours.

MESSRS. CASSELL AND CO. announce the forthcoming publication of "A History of British Fossil Reptiles," with 268 plates, by Sir Richard Owen, K.C.B. The edition, it is stated, consists of 170 copies only (each copy being signed by Prof. Owen), and no further number can be produced, as the plates from which the illustrations have been printed have been destroyed.

THE German Association of Naturalists and Physicians met last week at Magdeburg.

THE French Association for the Advancement of Science has decided that its next meeting will be held at Nancy. The President of this session, which promises to be most interesting, will be M. Friedel, member of the Academy of Sciences and Professor of Chemistry at the Sorbonne. The general secretary will be M. Collignon, Professor of Mechanics to the École des Ponts and author of the text-book on mechanics used in almost every French academy.

THE autumnal meeting of the Iron and Steel Institute was opened at Chester on Tuesday, when Dr. Percy, F.R S., was elected President.

THE Social Science Congress has been meeting at Birmingham during the past week. In the Education Department Mr. Oscar Browning was President, and in his inaugural address he contrasted the ardent desire for a University education displayed by the Germans, who were content to beg to obtain it, with the apathy displayed in England. Our primary education was organised in a manner which became more effective every year. A complete system of University education which should lead the best scholars from the primary school to the University, and which should educate the bulk of the middle class, could not be said to exist. This was a crying want; it paralysed the activity of England in many directions, and the want could not be adequately supplied without the initiative of the State. On the Continent there might be too much theory and too little practice, but in England we had suffered until lately from having no theoretical training at all. He advocated such a technical education as that by which the Continent had progressed so much during the last half-century. Contrasting Germany and England he showed how a youth naturally fitted for an academic career could, however poor, by State aid go to the German University, while he had no such sure road in England. The best means by which this deficiency in our national life could be supplied, he thought, would be, first, by putting ourselves on an equality with other nations by determining that in every town in England of a certain size there should be at least one State school, where, for a very moderate charge, an education of the classical type should be given equal to the best which the country could supply, and that by the side of this, either in the same school or in a separate establishment, according to the population of the town, there should be facilities for passing a curriculum of modern education which should fit a man either for a commercial or for a scientific career. It could not be hoped that such schools would be self-supporting, and the time would come when the amount contributed by the Budget to national education would mark the national prosperity.—In a paper in the same Section, Dr. H. W. Crosskey said that in order that science may be effectively taught in public elementary schools, it must be taught experimentally. Actual demonstrations must accompany the lessons at every stage. It must be taught systematically and continuously. The "getting up" of some branch of science during three or four months as a "specific subject" is of little use. Special science demonstrators must be appointed. No man can be a good demonstrator who does not devote to the work the greater part of his daily life. The ordinary master of a school has many duties to discharge. He cannot by any possibility give any sufficient proportion of his time to the art and practice of scientific demonstration. By the peripatetic system experimental lessons can be given at every school, by a trained man of science, at a moderate cost. A central laboratory is erected in which experiments are prepared. The demonstrator visits each school in succession, the apparatus being brought by a hand-cart from the laboratory. The results actually attained in Birmingham were described. It was argued that experimental teaching gives the death-blow to cram, and that the elements of ordinary education are better mastered when the intellectual life of the scholars is aroused by science. The arrangements of the peripatetic system will suffice until the Sixth Standard is passed ; but special provision must be made for those lads who can remain a year or two longer at school, and whose future employments render the extension of their scientific training desirable. To meet the wants of this class, a school has been opened as an experiment in New Bridge Street, Birmingham, in premises belonging to the Chairman of the Board (Mr. George Dixon), who, at the cost of more than 2000*l.*, has adapted them for the purpose, and placed them rent free at the service of the Board. It is specially intended for scholars who will have to become working-men, but whose parents can keep them at school after they have passed the Sixth Standard, and the fee (3*d.* a week) is adapted to their means. There is a special master for chemistry and metallurgy, another master for mechanics and physics, a drawing-master, and a mathematical master, a highly-qualified scientific man being placed at the head. Workshop instruction is provided, and includes a knowledge of the chief wood tools, and the properties of materials, while it supplements the mechanical drawing of the schoolroom, and it is an aid to the study of theoretical mechanics. The course of instruction is arranged to extend over two years. It is not an attempt to benefit a few picked scholars, or to provide a higher-grade school for those able to pay high feees, but it is a continuation of the science training given by means of the peripatetic method in every ordinary elementary school under the Board.

THE Americans are not content with an Electrical Exhibition at Philadelphia ; we see that there is to be another at Boston this year, opening on November 24 and closing on January 5, 1885. Space and power to be found free, but there is an entrance fee of ten dollars. The object of the Exhibition is stated to be "to show the rapid advancement that has been made in electricity, its methods and appliances, and all its possibilities and probabilities."

WE are requested to announce that the Fifth Annual Cryptogamic Meeting of the Essex Field Club will be held on Friday and Saturday, October 3 and 4, in Epping Forest. The meeting will be under the direction of Dr. Cooke, Dr. H. J. Wharton, Mr. Worthington Smith, Rev. Canon Du Port, Rev. J. M. Crombie, Prof. Boulger, Mr. David Houston, Mr. F. J. Hanbury, Mr. Henry Groves, Mr. W. W. Reeves, Dr. Spurrell, and other well-known botanists. Those wishing to attend the meeting should apply for programmes and tickets to the Honorary Secretary, Buckhurst Hill, Essex.

WE stated some months ago that Capt. Scheele of the Swedish rading barque *Monarch*, before leaving Sweden for Melbourne, had asked the Zoological Museum at Upsala to lend him the necessary apparatus, vessels, &c., for deep-sea researches, with which request the Museum gladly complied. The results appear to have been so fruitful, that the *New York Herald* and the *Sun*, on the vessel recently arriving in New York, sent representatives on board, and devoted a great deal of space to descriptions of the collection made by "the intelligent Swedish seaman." The collection is, it is stated, very rich, filling two hundred vessels, and contains many new varieties. It will be forwarded to Upsala, while Capt. Scheele proceeds with his scientific researches during a voyage to the West Indies.

ONE of the most remarkable articles of export ever despatched for scientific purposes from any country is without doubt the consignment which has just left Norway for Germany. It is no less than fifty-two skeletons of Lapps, which have during the summer been unearthed at Utsjok in Russian Lapland, and which an enterprising dealer of Vardö has sold to various museums and societies on the Continent at the price of 6*l.* a piece. Two of the skeletons are those of children, the rest those of adults.

THE Berlin Academy of Sciences has commissioned Dr. Georg Volkens, a young botanist, to proceed to the sulphur-baths of Heluan, which are situated some 20 kilometres west of Cairo, in order to make a thorough investigation of the anatomy of desert plants, and microscopical researches concerning the growth of these plants.

UP to the present the North Cape on Mager Oe was considered to be the northernmost point of Europe. Capt. Sörensen, however, has recently found that Cape Knivskjaerodden, on the same island and west of the North Cape, lies 30″ to the north of the latter; 30″ of arc would correspond to about 926 metres. The latitudes found by Capt. Sörensen for the two capes are 71° 10′ 15″ N. for the North Cape, and 71° 10′ 45″ N. for Cape Knivskjaerodden.

A SEVERE earthquake occurred at Windsor, Ontario, at a quarter to three on the afternoon of September 19. Shocks were felt at twenty minutes past two at Grasslake, Michigan, where some school children fainted with alarm, and at Toledo, Ohio, and neighbouring towns. The shocks lasted fifteen seconds, and in some instances buildings rocked and their contents were displaced.

MM. D. TOMMASI AND RADIQUET have brought out a new battery with two carbon electrodes. The positive electrode consists of a carbon plate placed at the bottom of a porcelain vessel and covered with peroxide of lead, the negative electrode consists of a carbon plate containing on its upper surface platinised coke. The two plates are separated by a sheet of parchment paper. The liquid used is a saturated solution of common salt, which must not completely cover the upper plate. The E.M.F. on closed circuit is 0·6 volts.

IN a paper on "Electric Lighthouses" M. De Meritens gives some very interesting figures in comparing oil and electricity as illuminants. The figures, he states, are taken from two memoirs by M. Allard. As an example, the light at Dunkirk, obtained from mineral oil, is 6,250 candles, which in weather of mean transparency is seen for 53 km. ; if this be compared with an electric light of 125,000 candles, it is found that the electric light is seen for 75·4 km. Thus, an increase in the illuminating power of twenty times only increases the penetrative distance 22 km. or 42 per cent. If we now take a less transparent state, the ratio is reduced to an increase from 24 to 32 km. or 34 per cent. Or, lastly, in very foggy weather the distances are 3·7 and 4·6 km., showing an increase of 24 per cent. From these general figures M. Allard has calculated that in foggy weather in the Channel the luminous intensity with oil of 6250 carcels is 3·805 km. ; then, if this be increased to an oil illumination of 125,000 carcels, the luminous intensity of 4·740 km. Now, comparing this with an electric light of 125,000 carcels, he finds the luminous distance to be 4·696, or the penetrating power of the electric light is less than 1 per cent. less than mineral oil, whilst its cost, as computed by both English and French engineers, is from four to six times less than that of oil.

THERE is unfortunately now no doubt that Phylloxera has begun to appear in Rhenish Prussia. The districts of Heimersheim and Lohrsdorf in the valley of the Ahr are hopelessly infected and considered lost. Every effort is being made to prevent the pest from spreading.

THE Japanese appear to be determined to render themselves, as far as possible, independent of foreign countries. They have, says the *Pharmaceutical Journal*, established in Tokio a factory for the production of pharmaceutical chemicals on a large scale. A company with a capital of about 40,000*l.* has been formed for this purpose. Of this amount the Government has contributed one-half free of interest for twenty years, besides making a free grant of land and erecting the necessary buildings. A similar company is taking up the utilisation of the waste *saké* from the native breweries in the manufacture of alcohol, and the manufacture of bleaching-powder on a large scale has been commenced. Whether with the object of "protecting" the first of these enterprises or not does not appear, but we learn from the same authority that an increased tax has been placed in Japan on imported patent medicines, and the nature of the articles to which this has been extended is stated to have largely affected the import of some chemicals into that country. Santonin, which was at one time much in request among the Japanese, decreased 20,000 ounces in import last year, although the price was lower; on the other hand, the consumption of quinine showed an increase.

IN a paper read before the Vaudois Society of Natural Sciences, M. Schnetzler explained the results of his studies on the colour of flowers. He argues that only one colouring substance exists in plants, and that the various colours of flowers are only due to the modifications made in this substance by the acids or alkalis contained in the plants themselves.

A VICTORY has been gained by Van Rysselberghe in Belgium by the solution of the problem of transmitting a telegraphic and a telephonic message along the same wire at the same time. A trial of this has been made at the Antwerp Universal Exhibition, where concerts held in important towns in Belgium were heard; the transmission being made with ordinary instruments along ordinary telegraph lines and with earth returns.

M. COLLADON has observed a curious phenomenon connected with hailstones. He observed, on some occasions, that two or three seconds after they had fallen they sprung into the air again, to a height of 0·25 m. or 0·30 m., as if they had been struck upwards by the earth.

THE additions to the Zoological Society's Gardens during the past week include a Green Monkey (*Cercopithecus callitrichus* ♂), a Ludio Monkey (*Cercopithecus ludio*) from West Africa, presented by Mr. A. Bowden; an Australian Fruit Bat (*Pteropus poliocephalus*) from Australia, presented by Capt. C. D. Long; a Tawny Owl (*Syrnium aluco*), British, presented by Miss H. Freeman; a Coypu Rat (*Myopotamus coypus*) from South America, presented by Mr. Frank Parish, F.Z.S.; two Black-billed Tree Ducks (*Dendrocygna arborea*) from Antigua, West Indies, presented by Mr. C. Arthur Shand; a Blackcap (*Sylvia atricapilla*), British, presented by Mr. H. Keilich; a Spanish Terrapin (*Clemmys leprosa*), South European, presented by Master A. Brierly; a Horned Lizard (*Phrynosoma cornutum*) from California, presented by Mr. Alfred R. Wallace, F.Z.S.; an Indian Python (*Python molurus*) from Ceylon, presented by Mr. A. A. Dalmege, F.R.G.S.; a Bonnet Monkey (*Macacus sinicus*) from India, two North African Jackals (*Canis anthus*) from Spain, deposited; two Half-collared Turtle Doves (*Turtur semitorquatus*), two Triangular-spotted Pigeons (*Columba guinea*), two Bronze-spotted Doves (*Chalcopelia chalcospilos*), four Harlequin Quails (*Coturnix histrionica*), an Allen's Porphyrio (*Hydrornia alleni*) from West Africa, received on approval; a Levaillant's Cynictis (*Cynictis penicillata*), three Long-fronted Gerbilles (*Gerbillus longifrons*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

THE FIGURE OF URANUS.—In a note communicated to the Reale Accademia dei Lincei, Prof. Millosevich collects the measures of Uranus which have been made by various observers, and adds the results of several series made by himself at the Observatory of the Collegio Romano. While the recent measures of Schiaparelli at Milan are in accordance with those of Mädler at Dorpat, as regards a very sensible ellipticity, most observers have failed to recognise, or at least have not referred to, any measurable quantity, amongst them Engelmann, Vogel, Lassell, Marth, and Kaiser. It is a point which might be expected to be readily settled if large telescopes were brought to bear upon it, and particularly if the double-image principle of measurement were employed.

THE LUNAR ECLIPSE ON OCTOBER 4.—During this eclipse the moon will be in a somewhat bare part of the sky, and with one exception no star brighter than the tenth magnitude will be occulted while she is immersed in the earth's dark shadow, or between 9h. 16m. and 10h. 48m. One of the tenth magnitude, of which an accurate position is given in vol. vi. of the Bonn Observations disappears at 9h. 33m. 35s. and reappears at 10h. 37m. 54s., the angles being respectively 137° and 271°; No. 800 of Weisse's Bessel, 0h. R.A., disappears at 10h. 35m. 24s. at 100°, but does not reappear till 11h. 45m. 35s. (308°) when the moon will have begun to emerge from the shadow; this star is estimated 9 m. by Bessel. The times are for Greenwich.

OLBERS' COMET OF 1815.—In Nos. 2613–14 of the *Astronomische Nachrichten* Prof. Krueger has printed the sweeping-ephemerides for this comet calculated by Herr Ginzel of Vienna, at least between the dates October 1 and January 1. Although the epoch of perihelion passage directly resulting from the computation of the perturbations during the present revolution does not fall before December 1886, the discussion of the observations in 1815 left an uncertainty of ± 1·6 year in the time of revolution at the instant of perihelion-passage in that year, and it may be well to commence a search for the comet forthwith; it is to be remarked, however, that, should it reach perihelion in midwinter in these latitudes, it is not likely to pass unobserved, the intensity of light being then at a maximum, and the comet at a high north declination.

THE COMET OF 1729.—"La Comète de 1729 est de toutes les comètes, observées jusqu'en 1780, celle qui a été vue à la plus grande distance du Soleil et de la Terre," writes Pingré in his "Cométographie." Upwards of a century has since elapsed, and yet no comet observed in the meantime has had a perihelion distance at all approaching that of the comet discovered by Père Sarabat at Nismes on July 31, 1729. The comet was seen until the end of January following, and was observed by Cassini until the 18th of that month. From some of his observations newly reduced, Burckhardt calculated both parabolic and hyperbolic orbits which were first published in the *Connaissance des Temps* for 1821. Recently, employing Burckhardt's reductions of Cassini's observations on September 3, November 10, and January 16, Mr. Hind has found the following parabolic elements:—

Perihelion passage, 1729, June 16·15422 M.T. at Paris

	°	′	″	
Longitude of perihelion	321	2	46·1	Mean Equinox 1730·0
,, ascending node ...	310	37	8·3	
Inclination	77	4	6·0	
Logarithm of perihelion distance..	0·607513			

Motion—direct

By which the middle observation is represented within 16″ in longitude and 10″ in latitude. The distances from the earth and sun at the times of the three observations are:—

1729 Sept. 3 ...	From Sun, 4·107 ...	From Earth, 3·142
Nov. 10 ...	,, 4·240 ...	,, 4·339
1730 Jan. 16 ...	,, 4·439 ...	,, 5·132

The distance in perihelion is 4·05, the earth's mean distance from the sun being taken as unity. The comet of 1747 had a perihelion distance of 2·198, which is the nearest approach to that of the comet of 1729; it was a very exceptional and extraordinary body.